

SPECIFICATIONS

SANITARY SEWER FLOW CONTROL

1. GENERAL. Should the depth of flow within the sanitary sewer main, outfall, or service lateral, exceed 50% of the pipeline being treated, or should the flow otherwise prevent the proper and adequate execution of work in progress, the Contractor may reduce the flow prior to proceeding, by plugging, blocking or bypassing the flow as may be necessary.
2. PLUGGING AND BLOCKING. The Contractor may control the sewer flow by plugging or blocking the flow upstream of the sewer reach being worked. The plug shall be so designed that all or any portion of the flow can be released. The plug shall at all times be secured in such a manner that will prevent the plug from entry into the outlet pipe of the manhole being used. Mechanical plugs requiring manned entry into the manhole to release the flow shall not be permitted.

Should flow bypassing be required the Contractor shall provide the pumps, conduits, and other equipment as may be necessary to divert the flow of sewage around the manhole reach in which work is to be performed. The bypass system shall be of sufficient capacity to manage the flow rates encountered throughout the bypassing operation.

3. EQUIPMENT BLOCKAGES. Should at any time flow control devices become lodged within the sewer the Contractor shall take immediate steps to set a flow bypass system as may be necessary to divert the flow of sewage around the problem area and to discharge back into the sanitary sewer. The Contractor shall immediately inform the Engineer of the problem. Should the Engineer determine that it is necessary; the City shall remove such an obstruction and repair the sewer at the Contractor's expense.
4. PRECAUTIONS. The Contractor shall take sufficient precautions to protect the sewer lines from damage that may result from sewer surcharging, and to insure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewer lines involved. At such times as the flow in a sewer is plugged, blocked, bypassed or unintentionally obstructed by lodged equipment or devices, the Contractor shall protect, indemnify, and save harmless the City from any and all claims, damages, or expenses that may be incurred as a result of such occurrences. The Contractor shall restore at his own expense, such property to a condition equal to that which existed before such damages or injuries were committed, by cleaning, repairing, rebuilding, or replacing, as may be required by the Engineer.

CHEMICAL CONTROL OF ROOT INTRUSION

1. GENERAL. The Contractor shall provide for the application of chemical agents specifically formulated for the control of root intrusions into sanitary sewer systems. The application of chemical agents shall destroy existing pipeline root intrusions. The application of the chemical root control agents shall not cause permanent damage to the producing vegetation, and shall not disrupt the wastewater treatment plant processes or of the sanitary sewer collection system.
2. PUBLIC ADVISORY. Prior to beginning operations, the Contractor shall provide a minimum of 48 hours written notice to all individuals, homeowners, business owners, utilities, and all others who may be affected by any aspect of the project.
3. MATERIALS. The chemical root treatment material utilized by the Contractor shall be either "Razerooter™ II", as manufactured by Sewer Sciences, Inc., Syracuse, NY or Sanafoam roo-pru™, as manufactured by Douglas Products and Packaging, Liberty, Mo. or the equivalent thereof. All materials utilized by the Contractor shall have the approval of the Engineer prior to use. Chemical root treatment materials containing copper or metam sodium or other known priority pollutants, as defined by the United States Environmental Protection Agency will be disallowed.
 - a) The chemical agents utilized by the Contractor shall be registered with the North Carolina Department of Agriculture and Consumer Services.
 - b) The chemical shall be non-volatile.
 - c) The chemical shall not be a carcinogen, teratogen, mutagen or oncogene, per the USEPA.
 - d) The chemical shall not carry the word "Danger". Only EPA "Warning" or "Caution" labeling will be acceptable.
 - e) The chemical agents utilized by the Contractor shall be registered with the United States Environmental Protection Agency.

The Contractor shall submit, with his bid, the specimen product label and Safety Data Sheet for the chemical root control agent that the Contractor proposes to use.

The Contractor shall submit, with his bid, the North Carolina Department of Agriculture and the United States Environmental Protection Agency Registrations for any chemical root control agent that the Contractor proposes to use.

Materials shall be delivered to the job site in original, unopened packages and shall clearly be labeled for use in sanitary sewers to control roots. Labeling shall also include the manufacturer's identification and application instructions. Materials shall be transported, stored, handled, and applied in accordance with the instructions and recommendations of the manufacturer and regulatory agencies.

4. SERVICE INTERRUPTION. Sewer service shall not be interrupted for the application of a chemical root treatment unless otherwise directed by the Engineer.
5. FLOW REQUIREMENTS. Should the flow of a sewer exceed 50% of the pipe diameter at the time of treatment, the Contractor shall not attempt an application, or continue an application of the chemical root treatment agents until such time as the flow of that sewer is less than the specified depth and anticipated to be so for a minimum period of 12 hours. The Contractor may control the excessive flow of a sewer by plugging, blocking or bypassing as herein specified.
6. SEWER BLOCKAGE. Should a sewer be surcharged due to a blockage at the time of treatment, the Contractor shall so inform the Engineer and the City shall clean the sewer as may be necessary to restore flow.
7. REPEAT OR DELAYED APPLICATION. Should a sewer surcharge for any reason within a 12 hour period after the application of a chemical root treatment, the Contractor will be required to retreat that section of sewer. Should it be necessary to clean a sewer of sedimentation, deposits, or grease accumulation to enable a proper application, the Contractor shall not attempt a chemical root treatment of that sewer for a minimum period of 60 days after any cleaning work has been performed. There will be no additional compensation to the Contractor for repeat or delayed root treatment applications.
8. MATERIAL APPLICATION. Application of the chemical root control agent shall be by foaming in accordance with the best recommended practice for the conditions present in the line at the time of treatment. All foaming procedures shall be in strict accordance with the instructions on the container label.

The surfactant system shall produce a dense, small bubble, clinging foam, which will sustain itself for a minimum of one hour. The foam shall be generated by use of air injection equipment and shall be pumped into the sewer as foam. The application of chemicals formulated to produce foam on contact with water will not be allowed.

9. APPLICATION METHOD. A foam discharge hose shall be inserted throughout the entire length of the sewer section to be treated. Hydraulic or mechanical sewer cleaning machines may not be used to convey the foam discharge hose through the sewer section, or to convey ropes or cables through the sewer section. Acceptable methods of conveying the foam discharge hose through the sewer are:
 - a) A manual or mechanical push of the foam discharge hose through the section
 - b) A manual or mechanical pull of the foam discharge hose through the section by use of a floated rope

10. **APPLICATION RATE.** The application equipment used shall discharge foam at approximately 30 PSI. Hose retrieval rates shall be timed to evenly distribute the full quantity of foam throughout the entire area of treatment. The quantity of foam shall be sufficient to completely fill the entire volume of the subject sewer main or outfall, and to provide for the injection of material approximately 10 feet into lateral sewers, and will account for loss in manholes.
11. **SITE PRECAUTIONS.** The Contractor shall control the discharge pressure and quantity of a chemical root treatment application so as to prevent the overflow of materials from the subject sewer. Should any chemical root control agent spill or overflow to the ground, the chemical and the affected soil shall be removed and safely disposed of, and the area shall be restored to a condition equal to that before the spill. Any personal injury or damage to vegetation or structures resulting from use of the chemical root control agents shall be the responsibility of the Contractor.

If it necessary and prudent for a contractor to enter a manhole or wetwell or sanitary sewer structure to perform the work on this project, the Contractor must follow current industry standards for confined space entry, including, but not limited to, federal code 29 CFR 1910.146. Furthermore, the City of Durham requires completion of proper entry documentation and following of its procedures when entering a permit-required confined space.

12. **TREATMENT FACILITY PRECAUTIONS.** The Contractor shall use precautions as may be necessary for the protection of wastewater treatment facility processes as well as the water quality of the facilities receiving stream.
 - a) **Notification.** The Contractor shall notify the respective wastewater treatment facility operator of the date and time of all intended work, and provide the operator with data or other information that may be requested, including specimen product labels, Material Safety Data Sheets, and the intended application rates and quantities for any materials introduced to the collection system.
 - b) **Contact Numbers.** The Contractor shall provide each wastewater treatment facility operator with the names and phone numbers of two individuals with the authority to immediately stop the work of the Contractor. The Contractor shall maintain daily communications with each wastewater treatment facility operator to assure that the chemical root control applications are not adversely affecting the wastewater treatment process, in the opinion of the operator.
 - c) **Treatment Facility Upsets.** Should for any reason, a wastewater treatment facility develop a reduction in efficiency, the Contractor shall immediately suspend all chemical root control applications upon notification of such by

the wastewater treatment facility operator or by the Engineer. The contractor shall resume operations only after the processes of the wastewater treatment facility have been normalized or as directed by the Engineer.

The Contractor shall be responsible for any adverse effects on wastewater treatment facility processes or receiving stream that are, directly or indirectly, caused by the application of chemical root control treatments, including but not limited to facility processes or equipment, pollution of waterways, fines imposed on the City or employees of the City by Federal or State agencies, civil suits, clean-up costs, and restoration costs. The Contractor shall further indemnify and hold harmless the City or employees of the City, against all costs, including legal expenses, relative to treatment facility process disruption, pollution of waterways, or other damages caused, as a direct or indirect result of the application of chemical root control treatments by the Contractor.

13. **PROJECT REPORTS.** The Contractor shall submit daily summary reports, to the Engineer, which shall provide, at a minimum, the following information:

- The report date
- The name of, and the NC Pesticide Applicators License number of the Contractor's representative who supervised the applications
- The street or easement name for each sewer where work was conducted
- The City manhole numbers for each sewer treated
- The diameter and length for each sewer treated
- A description of work conducted for each sewer treated
- The quantity of root control chemical used for each sewer treated
- Special conditions for each sewer treated, if any
- Each daily report shall be signed by the both the Contractor's project supervisor and by the City's project inspector

These summary Reports can be gathered and provided on a weekly basis.

14. **GUARANTEE.** The Contractor shall guarantee all treated sanitary sewer mains and outfalls from root intrusion for a period of 24 months, beginning with the acceptance date of the initial treatment. Should live root intrusions be discovered within a treated sewer during that period, or should a blockage resulting from root intrusion develop within a treated sewer during that period, the Contractor shall refund 100% of the payment received for treatment of that section, or, at the option of the Engineer, the Contractor shall re-treat such a sewer at no additional cost.

The guarantee shall apply only to main and outfall sewer blockages caused by live tree roots, but shall not apply to blockages caused by grease or other foreign matter, collapsed or deformed pipe, or surcharge caused by an obstructed sewer section downstream of a guaranteed sewer section. The Contractor shall accept as

binding, the Engineer's determination as to the cause of a sewer blockage for the purpose of this Guarantee.

The Contractor shall submit such a guarantee in writing with his bid.

METHOD OF PAYMENT

Payment for all work under the provisions of the Contract shall be by the lineal foot as measured from centerline to centerline of the involved manholes, at the unit prices bid and set forth in the executed Contract, and shall be made on the basis of the actual quantity of work accomplished by the Contractor that is complete to the satisfaction of the Engineer, as herein specified. There shall be no additional payments to the Contractor for costs that are incidental to the performance of this Contract including but not limited to those costs associated with performance and payment bonds, insurance, mobilization, traffic control, safety precautions, water supply, waste and hazardous waste disposal, sewer flow control, sewer blockage relief, sewer cleaning, and any remedial work that may be required.

The initial Contract will be for a two-year period, starting on the date of the Notice to Proceed. Near the end of this two-year period, if both parties agree to an extension, the extension will be for a one -year period. Furthermore, both parties can agree to a second one-full year extension, as the time for the first extension draws to a close.

As shown in the BID PROPOSAL TABLE, there is an allowance for price adjustment for the extension period(s). The Unit Prices in the original proposal shall be adjusted, as indicated for the first extension period. If a second extension is agreed upon, the adjusted Unit Prices will be further adjusted.